

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

**Sixth
Edition**

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On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)

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Sixth Edition**

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defined on a sigma algebra of subsets of a set S such that (1) the value of m on the empty set is 0, (2) the value of m on a countable union of disjoint sets is the sum of its values on each set, and (3) m assumes at most one of the values $+\infty$ and $-\infty$. (*sig'neɪt̬ mɛz̬-ər*)

agnet-ring cell [HISTOL] A cell with a large fat- or carbohydrate-filled vacuole that pushes the nucleus against the cell membrane. (*'sig-næt̬ ,rɪŋ 'sel̬*)

sign flag [COMPUT SCI] A bit in a status byte in a computer's general processing unit that indicates whether the result of an arithmetic operation is positive or negative. (*'sig.n,flag*)

significance [MATH] The arbitrary rank, priority, or order of relative magnitude assigned to a given position in a number. (*'sig'nɪfɪ-kəns*)

significance arithmetic [COMPUT SCI] A rough technique for estimating the numbers and positions of the significant digits of the radix approximation that results when an arithmetic operation is applied to operands in radix approximation form. (*'sig'nɪfɪ-kəns ə,rɪth-mətɪk*)

significance level See level of significance. (*'sig'nɪfɪ-kəns ,ləvəl*)

significance probability [STAT] The probability of observing a value of a test statistic as significant as, or even more significant than, the value actually observed. (*'sig'nɪfɪ-kəns ,prɪb'ə,bil'əd̬-ə*)

significant digit See significant figure. (*'sig'nɪfɪ-kənt̬ ,dɪgɪt*)

significant figure [MATH] A prescribed decimal place which determines the amount of rounding off to be done; this is usually based upon the degree of accuracy in measurement. (Also known as significant digit. (*'sig'nɪfɪ-kənt̬ ,fig.yər*)

significant wave [OCEANOGR] Statistically, a wave with the average height of the highest third of the waves of a given wave group. (*'sig'nɪfɪ-kənt̬ ,wāv*)

signless Stirling number [MATH] The absolute value of a Stirling number of the first kind. (*'sig'nl̬s̬ st̬rɪl̬ ,nəm̬-bər*)

sign of aggregation [MATH] One of a pair of parentheses, braces, brackets, or bars which signify that the terms they enclose are to be treated as a single term. (*'sig'vəg'ə-shən*)

sign of the zodiac [ASTRON] The zodiac is divided into 12 sections, called signs, in each of which the sun is situated for 1 month of the year; each sign, 30° in length, is named from a constellation with which the sign once coincided. (*'sig'vəz'd̬-ək*)

sign position [COMPUT SCI] That position, always at or near the left or right end of a numeral, in which the algebraic sign of the number is represented. (*'sig'pə,zɪshən*)

sign stimulus [PSYCH] A specific external stimulus that initiates certain behavioral sequences that typically occur in a fixed stereotyped fashion. (*'sig' ,stɪm.yə-ləs*)

sign test [STAT] A test which can be used whenever an experiment is conducted to compare a treatment with a control on a number of matched pairs, provided the two treatments are assigned to the members of each pair at random. (*'sig' ,test*)

sgn(x) [MATH] The function $\text{sgn}(x)$, defined for all real values of x , where $\text{sgn}(x) = 1$ if $x > 0$, $\text{sgn}(x) = -1$ if $x < 0$, and $\text{sgn}(0) = 0$. (*'sig.nəm̬*)

sigua [METEOROL] A straight-blowing monsoon gale of the Philippines. (*'sē,wā*)

sigusak [OCEANOGR] Very old sea ice trapped in fjords; it resembles glacier ice because snowfall and snow drifts contribute to its formation. (*sə'kū,sāk*)

SIL See speech interference level.

silage [AGR] Green or mature fodder that is fermented to retard spoilage and produce a succulent winter feed for livestock. (*'sil̬-ɪj*)

silane [INORG CHEM] Si_nH_{2n} A class of silicon-based compounds analogous to alkanes, that is, straight-chain, saturated paraffin hydrocarbons; they can be gaseous or liquid. Also known as silicon hydride. (*'si,lan*)

silanol [CHEM] A member of the family of compounds whose structure contains a silicon atom that is bound directly to one or more hydroxyl groups. (*'si,lo,nol*)

silcrete [GEOL] A conglomerate of sand and gravel cemented by silica. (*'sil,kret̬*)

silent discharge [ELECTR] An inaudible electric discharge in air that occurs at high voltage and consumes a relatively large amount of energy. (*'si,lənt̬ 'dis,chr̬j*)

silent mutation [GEN] A mutation that does not result in amino acid sequence change. (*'si,lənt̬ myu'tā'shən*)

silent period [COMMUN] Period during each hour in which ship and shore radio stations must remain silent and listen for distress calls. (*'si,lənt̬ 'pir̬-əd̬*)

silent speed [ENG] The speed at which silent motion pictures are fed through a projector, equal to 16 frames per second (sound-film speed is 24 frames per second). (*'si,lənt̬ 'spēd̬*)

silent stock support [MECH ENG] A flexible metal guide tube in which the stock tube of an automatic screw machine rotates; it is covered with a casing which deadens sound and prevents transfer of noise and vibration. (*'si,lənt̬ 'stāk sə,pōrt̬*)

silox [MATER] Heat- and shock-resistant glass containing about 98% quartz. (*MINERAL*) A pure or finely ground quartz. (*'si,leks*)

silicate [GEOL] Chert occurring in calcareous beds. (*PETR*) Igneous rock composed mainly of primary quartz. (*'si'lek,sit̬*)

silhouette target [ORD] 1. Target whose shape is outlined against a light background, although its body features cannot be clearly seen. 2. Practice target consisting of the dark image of a person or object outlined against a light background. (*'si,lət̬'wet̬ 'tār̬-gāt̬*)

silica [MINERAL] SiO_2 Naturally occurring silicon dioxide; occurs in five crystalline polymorphs (quartz, tridymite, cristobalite, coesite, and stishovite), in cryptocrystalline form (as chalcedony), in amorphous and hydrated forms (as opal), and combined in silicates. (*'si,lət̬'kə*)

silica aerogel [MATER] A colloidal silica powder whose grains have small pores; used as a low-temperature insulator. (*'si,lət̬'kə'ēr̬-ə,jel̬*)

silica brick [MATER] A type of refractory brick formed of at least 90% silica cemented with, for example, slurred lime; used to line furnace roofs. (*'si,lət̬'kə'brik*)

silica cement [MATER] A mortar used with silica cement; it is a refractory material. (*'si,lət̬'kə'si'mēnt*)

silica flour [MET] A sand additive for casting produced by pulverizing quartz sand. (*'si,lət̬'kə'flau̬-ər*)

silica fume [MATER] A fine-particulate waste product of electric-arc furnaces, consisting primarily of amorphous (non-crystalline) silicon dioxide; its most important use is in the production of high-strength concrete. Also known as micro-silica. (*'si,lət̬'kə,fyūm*)

silica gel [INORG CHEM] A colloidal, highly absorbent silica used as a dehumidifying and dehydrating agent, as a catalyst carrier, and sometimes as a catalyst. (*'si,lət̬'kə'jēl̬*)

silica glass [MATER] A translucent or transparent vitreous material consisting almost entirely of silica. Also known as fused silica; vitreous silica. (*'si,lət̬'kə'glas*)

silica sand [GEOL] Sand having a very high percentage of silicon dioxide; a source of silicon. (*'si,lət̬'kə'sand*)

silica stone [PETR] A sedimentary rock composed of siliceous minerals. (*'si,lət̬'kə'stōn*)

silicate [INORG CHEM] The generic term for a compound that contains silicon, oxygen, and one or more metals, and may contain hydrogen. (*MINERAL*) Any of a large group of minerals whose crystal lattice contains SiO_4 tetrahedra, either isolated or joined through one or more of the oxygen atoms. (*'si,lət̬'kət̬*)

silicate cement [MATER] The silicate of soda glue, used as an adhesive in cardboard and plywood boxes. (*'si,lət̬'kə'si'mēnt*)

silicate cotton See mineral wool. (*'si,lət̬'kə'köt̬-ən*)

silicate grinding wheel [DES ENG] A mild-acting grinding wheel where the abrasive grain is bonded with sodium silicate and fillers. (*'si,lət̬'kə'grind-in̬ ,wei*)

silicate of soda See sodium silicate. (*'si,lət̬'kə'əv 'sōd̬-ə*)

silicate paint [MATER] A paint in which the vehicle is water-soluble sodium silicate; used for painting mortar. (*'si,lət̬'kə'pānt̬*)

silication [GEOL] The conversion to or the replacement by silicates. (*'si,lət̬'kə-shən*)

silicatization [MIN ENG] The sealing off of water by the injection of calcium silicate under pressure; sometimes used to reduce the leakage of water through defective lengths of tubing in a shaft. (*'si,lət̬'kəd̬-ə'zā-shən*)

siliceous [PETR] Describing a rock containing abundant silica, especially free silica. (*sə'lɪsh̬-əs*)